REMARKS

Claims 6-16 and 18--26 are pending in the application. Claims 5-14 are currently amended. Claim 17 is cancelled. Claims 19-26 are new claims.

The amendments to the claims address the means and associated methodology for improving the functionality of the cellobiohydrolase as summarized on page 6 at lines 7-26 of the Specification, which are discussed in greater detail throughout the entire remainder of the specification. Limitations deleted from claim 6 have been added as new claim 25.

Claim Rejections 35 U.S.C. §101

The Office asserts that claims 6-18 are not supported by a utility. With all due respect, the specification states a repetitive and overwhelming case for utility. The claims are clearly supported by a utility where each manner of claimed mutation is specifically disclosed as having a specific utility, e.g., where improved thermostability is disclosed in the Specification at page 4, lines 32-33; page 5, lines 21 and 27; page 6 at lines 9 and 28-29. Furthermore, the variant cellobiohydrolase is also used to convert a biomass to component sugars and/or to provide improved end-product inhibition, for example, as described on page 7 at lines 12-13 and 15. The variant cellobiohydrolase may have an improved geometric configuration to reduce conformational strain as described on page 5 at lines 22-29. The variant cellobioydrolase may have reduced glycosylation sites as described on page 6 at lines 1-20.

For the above reasons, the rejection under 35 U.S.C. §101 has no basis and must be withdrawn.

Claim Rejections 35 U.S.C. §112 First Paragraph

Claims 6-18 stand rejected under 35 U.S.C. §112 first paragraph because it is asserted the claimed invention has no utility. As explained above, the Specification clearly establishes a utility, and the rejection must be withdrawn.

Claims 12-18 stand rejected under 35 U.S.C. §112 first paragraph because those skilled in the art cannot understand how to use what is claimed. This resulted from an incorrect reference to the SEQ IDs. The foregoing amendments resolve any ambiguity and clarify the claims so that they can now be understood. This overcomes the indicated rejection.

Claim Rejections 35 U.S.C. §112 Second Paragraph

Claims 12-18 stand rejected under 35 U.S.C. §112 second paragraph for indefiniteness. The confusion may have resulted from an incorrect reference to the SEQ IDs, but is rendered moot where the foregoing amendments resolve any ambiguity and clarify the claims so that they can now be understood. This overcomes the indicated rejection. Claim 18 has been amended as the Examiner suggests.

Claims Rejections 35 U.S.C. §102

Claims 17 and 18 stand rejected under 35 U.S.C. §102(b) on the basis that SEQ ID NO: 22 is found in Nakari and Fowler. The rejection is rendered moot by the cancellation of claim 17 and the amendment of claim 18.

Claims Rejections 35 U.S.C. §103

Claims 11-14 stand rejected under 35 U.S.C. §103(a) over Godbole. The examiner finds that *Pichia* species are known to overglycosylate heterologous proteins, so it would be obvious to eliminate glycosylation sites. Applicant has cited Godbole to show that it teaches away from what is claimed, namely, by stating "these forms of rCBH I are not appropriate for structure-based protein engineering." The Examiner arbitrarily interprets this to mean in this host. We disagree and so traverse the rejection.

With all due respect, the Examiner is wrong about what the reference teaches. The Examiner cites a passage from Godbole that the instant research thereof was intended to increase the thermal tolerance of *T. Reesei* CBH I by protein engineering. They tried *Pichia* and failed. Despite what they might have done as speculated by the

Examiner, *Godbole* did not report proceeding to mutate the gene to eliminate glycosylation cites. Godbole reports encountering an insuperable problem and quit. Why did they quit? This is stated in the conclusion, "these forms of rCBH I are not appropriate for structure-based protein engineering." Godbole merely teaches that glycosylation is a problem and that one should quit rather than engineer the protein to eliminate glycosylation sites as is claimed. Godbole does not teach or suggest that the glycosylation sites may be eliminated—Godbole merely teaches that the rCBH I is not amenable to protein engineering because of glycosylation so one should quit. It is not at all obvious to eliminate the glycosylation sites, and the fact that Godbole did quit supports Applicant's contention that at most the Examiner has stated a case for "obvious to try."

The amended claims now further distinguish Godbole by identifying specific mutations that Godbole neither teaches nor suggests.

Claims 6 and stand rejected under 35 U.S.C. §103(a) over Srisodsuk et al. The amendments to claims 6 and 8 render the rejection moot; however, it will be appreciated that this aspect of the former claims is now found in claim 25. Application reiterates that Srisodsuk et al. does not teach or suggest shortening of the linker sequence and merely reports a range of values that may occur in nature. Furthermore, the teaching of Srisodsuk et al. is overly general and has nothing to do with what is now particularly claimed.

Amended claim 11 now identifies sites for such mutations that are not taught or suggested by Srisodsuk et al.

Conclusion

For the foregoing reasons, Applicants' attorney respectfully solicits a Notice of Allowance in this application. The Commissioner is authorized to charge any additionally required fees to Deposit Account 14-0460. Should the Examiner have any questions, comments, or suggestions that would expedite the prosecution of the present

case to allowance, Applicants' undersigned representative earnestly requests a telephone call at (303) 384-7575.

Respectfully Submitted,

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